WHAT IS CLAIMED IS:

1. A rotor configuration for an electric machine, the rotor configuration comprising:

a rotor shaft;

a multi-pole rotor core secured to the rotor shaft;

a plurality of field winding modules respectively disposed over each pole of the multi-pole rotor core;

an enclosure disposed over the field winding modules and containing the field winding modules over the rotor core; and

a magnetic shield disposed over the field winding modules between the field winding modules and the enclosure.

2. A rotor configuration according to claim 1, wherein the enclosure comprises a one-piece tube shaped to fit over the multi-pole rotor core, the field winding modules, and the magnetic shield.

3. A rotor configuration according to claim 1, wherein the enclosure comprises an assembly of rings.

4. A rotor configuration according to claim 1, wherein the enclosure encloses the field winding modules over an entire length of the rotor core.

5. A rotor configuration according to claim 1, wherein the enclosure is formed of a metallic material.

6. A rotor configuration according to claim 1, wherein the enclosure is formed of a composite material.

7. A rotor configuration according to claim 1, wherein the magnetic shield comprises an assembly of hoop discontinuous axial members connected by close loop end circuits.

8. A rotor configuration according to claim 1, wherein the magnetic shield comprises a one-piece tube shaped to fit over the multi-pole rotor core and the field winding modules.

9. A rotor configuration according to claim 1, wherein the magnetic shield is formed of an electrically conductive material.

10. A rotor configuration for an electric machine, the rotor configuration comprising:

a rotor shaft;

a two-pole rotor core secured to the rotor shaft;

a pair of field winding modules respectively disposed over each pole of the two-pole rotor core;

an enclosure including an assembly of metallic or composite structural rings disposed over the field winding modules and containing the field winding modules over a length of the rotor core; and

a magnetic shield disposed over the field winding modules between the field winding modules and the enclosure.

11. A rotor configuration according to claim 10, wherein the magnetic shield comprises an assembly of hoop discontinuous axial members connected by close loop end circuits.

12. A rotor configuration according to claim 10, wherein the magnetic shield comprises a one-piece tube shaped to fit over the two-pole rotor core and the field winding modules.

13. A rotor configuration according to claim 10, wherein the magnetic shield is formed of an electrically conductive material.

14. A method of assembling a rotor configuration for an electric machine, the method comprising:

securing a multi-pole rotor core to a rotor shaft;

disposing a plurality of field winding modules over each pole of the multi-pole rotor core, respectively;

containing the field winding modules over the rotor core with an enclosure; and

placing a magnetic shield over the field winding modules between the field winding modules and the enclosure.